

EXHIBIT 7

FIGURE 2.

CONSTRUCTION OF VECTOR fdTetSXNS

Figure 2 (i) Derivation of gene III sequence of fdTetSXNS from the native fd sequence

Native gene III sequence (Beck et al; Beck and Zink)

Signal cleavage

CCT TTA GTT CCT TTC TAT TCT CAC TCC GCT GAA ACT GTT GAA AGT TGT TTA GCA AAA CCT CAT
Pro Leu Val Val Pro Phe Tyr Ser His Ser Ala Glu Thr Val Glu Ser Cys Leu Ala Lys Pro His

Zacher et al make the fdTet vector by inserting a transposon into the bacteriophage fd genome. In the process they make no alterations to the native gene III sequence.

Mutation with the oligonucleotide shown on page 24, lines 20 to 21 of the Dower et al leads to the sequence of fdTetB1

Oligonucleotide page 24, lines 20 to 21

5' TAT GAG GTT TTG CCA GAC AAC TGG AAC AGT TTC AGC GGA GTG CCA GTA GAA TGG AAC AAC TAA AGG 3'
Reverse complement of this oligonucleotide

5' CCT TTA GTT GTT CCA TTC TAC TGG CAC TCC GCT GAA ACT GTT CCA GTT GTC TGG CAA AAC CTC ATA 3'

fdTetB1

Signal cleavage

CCT TTA GTT GTT CCA TTC TAC TGG CAC TCC GCT GAA ACT GTT CCA GTT GTC TGG CAA AAC CTC ATA
GGA AAT CAA CAA GGT AAG ATG ACC GTG AGG CGA CTT TGA CAA GGT CAA CAG ACC GTT TTG GAG TAT
Pro Leu Val Val Pro Phe Tyr Trp His Ser Ala Glu Thr Val Pro Val Val Trp Gln Asn Leu Ile

Figure 2 (continued.ii)

BstXI sites of fdTetB1 and fdTetBSN

CCT TTA GTT GTT CCA TTC TAC TGG CAC TCC GCT GAA ACT GTT CCA GTT GTC TGG CAA AAC CTC ATA
GGA AAT CAA CAA GGT AAG ATG ACC GTG AGG CGA CTT TGA CAA GGT CAA CAG ACC GTT TTG GAG TAT

BstXI

BstXI

Digestion at the 5' BstXI site

CCT TTA GTT GTT CCA TTC TA C TGG CAC TCC GCT GAA ACT GTT CCA GTT GTC TGG CAA AAC CTC ATA
GGA AAT CAA CAA GGT A AG ATG ACC GTG AGG CGA CTT TGA CAA GGT CAA CAG ACC GTT TTG GAG TAT

Digestion at the 3' BstXI site

CCT TTA GTT GTT CCA TTC TAC TGG CAC TCC GCT GAA ACT GTT CCA GTT GT C TGG CAA AAC CTC ATA
GGA AAT CAA CAA GGT AAG ATG ACC GTG AGG CGA CTT TGA CAA GGT C AA CAG ACC GTT TTG GAG TAT

Digestion at both BstXI sites

Vector

CCT TTA GTT GTT CCA TTC TA
GGA AAT CAA CAA GGT A

Pro Leu Val Val Pro Phe

C TGG CAA AAC CTC ATA
AA CAG ACC GTT TTG GAG TAT

Val Trp Gln Asn Leu Ile

Fragment which is removed

C TGG CAC TCC GCT GAA ACT GTT CCA GTT GT
AG ATG ACC GTG AGG CGA CTT TGA CAA GGT C

Figure 2 (continued iii)

Ligate in oligonucleotide from page 25, lines 10 to 11 (in italics) to give fdTetSNXS (* =
amber codon)

CCT TTA GTT GTT CCA TTC TAG CCT CGA GAG CAC GAC GTA CTA GTG CTT GTC TGG CAA AAC CTC ATA
GGA AAT CAA CAA GGT AAG ATC GGA GCT CTC GTG CTG CAT GAT CAC GAA CAG ACC GTT TTG GAG TAT
Pro Leu Val Val Pro Phe * Pro Arg Glu His Asp Val Leu Val Leu Val Trp Gln Asn Leu Ile

Restriction sites in fdTetSNXS

CCT TTA GTT GTT CCA TTC TAG CCT CGA GAG CAC GAC GTA CTA GTG CTT GTC TGG CAA AAC CTC ATA
GGA AAT CAA CAA GGT AAG ATC GGA GCT CTC GTG CTG CAT GAT CAC GAA CAG ACC GTT TTG GAG TAT

XhoI

SpeI